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**Notice of Allowability**

Application No.

10/634,214

Applicant(s)

RASHID ET AL.

Examiner

Terry L. Englund

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amdt/Dwgs (Dec 23, 2004) and Interviews (Mar 25 & 30, 2005).
2. ☒ The allowed claim(s) is/are 1 and 3-8 (now renumbered as claims 1, 3-5, 7, 6, and 2, respectively for printing purposes).
3. ☒ The drawings filed on 23 December 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

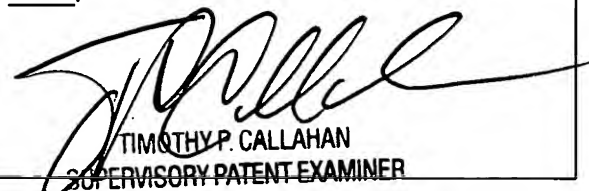
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☒ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 08252004.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 03302005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
TIMOTHY P. CALLAHAN  
SUPERVISORY PATENT EXAMINER

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to the applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with the applicants' representative James H. Morris (Reg. No. 34,681) on Mar 30, 2005.

The application has been amended as follows:

Claim 1, line 3: changed "as a current source" to --in a current mirror type configuration--;

line 4: changed "an output current" to --branch currents--;

line 10: added --variations of-- after "current with";

Claim 3, line 3: added --first-- prior to "current mirror";

line 4: replaced "a" with --another--;

Claim 6, line 5: changed "as a current source" to --in a current mirror type configuration--;

line 6: changed "an output current" to --branch currents--; added --circuit-- after "first";

line 9: changed "a current" to --another current--;

line 14: added --variations of-- after "current with";

Claim 8, line 2: changed "a current" to --another current--; and

line 3: changed "the collector" to --a collector--.

Line 3 of claim 1 was changed for two reasons: 1) to distinguish its "current source" from "A current source" recited within the preamble; and 2) to provide some type of relationship

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between the first and second circuit branches. The change to claim 1, line 4 was also made for two reasons: 1) to distinguish the circuit branches' "output current" from "an output current" recited within the preamble; and 2) to help minimize possible confusion with respect to the output transistor's "output current" as recited within claim 4. [Note: Using the applicants' Fig. 4 as an example, one of ordinary skill in the art would understand that each of circuit branches Re1,Q1,Q3,R,Rc and Re2,Q2,Q4 has its own respective current, wherein the actual output current I'out of the current source is provided by output transistor Qo, which is not in either the first or second circuit branch.] Line 10 of claim 1 was amended to help clarify the relationship between the output current and the first reference voltage. For example, it is now better understood that even if the first reference voltage does vary, the output current will not change much. The changes to claim 3 help to distinguish the two current mirrors from one another. It is also understood that these current mirrors relate back to the --current mirror type configuration-- now recited within claim 1. Three of the changes to claim 6 (i.e. on lines 5, 6 and 14) were made for the same reasoning as applied to claim 1 described above. Another change on line 6 was made to ensure consistent labeling (i.e. "first circuit branch") throughout the claim, and the line 9 change was made to distinguish the start-up circuit's "current mirror configuration" from the circuit branches' "current mirror type configuration" now recited on line 5. Claim 8, line 2 was amended to distinguish the start-up circuit's "current mirror configuration" from the circuit branches' "current mirror type configuration" now recited on line 3 of claim 1, and since the start-up transistors had not been identified as bipolar transistors, line 3 of claim 8 was modified to minimize possible antecedent type problems with respect to "the collector."

### **RESPONSE TO AMENDMENT/DRAWINGS**

The amendment and drawings submitted on Dec 23, 2004 were reviewed and considered with the following results:

The proposed drawings changes overcame the objections of Figs. 1-2 as described in the previous Office Action. Therefore, those objections have been withdrawn.

The new abstract overcame its objections, which have also been withdrawn.

The cancellation of claim 2 rendered its objection and rejections moot.

Although the amendment addressed the “first branch” related objection (e.g. consistent labeling) within claim 1, this objections was carried over into claim 6 when it was amended into an independent claim. However, this new objection was addressed by the Examiner’s Amendment described above. Therefore, the claim objections described in, or related to, the previous Office Action have now been withdrawn.

The amended claims did not overcome the structural relationship, and the “acts to reduce changes” related, rejections of claims 1 and 3-7 under 35 U.S.C. 112. Also, the amended changes created new 112 type rejections, and newly added claim 8 had its own concerns noted. However, all of these rejections and concerns were addressed/corrected by the Examiner’s Amendment as described above. Therefore, all the 35 U.S.C. 112 related rejections described in the previous Office Action have now been withdrawn.

Amended claim 1 overcame its rejection under 35 U.S.C. 102(e) with respect to Sean et al. That reference shows first/second MOSFETs, instead of first/second bipolar transistors, in the first circuit branch. Even if there would be motivation to replace Sean’s MOSFETs M1,M1C with bipolar transistors, there is no motivation to ensure the base and collector of the first

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transistor are connected together as now recited within claim 1. Also, Sean et al.'s start-up circuit does not generate a start-up current that continues to flow after start-up (e.g. see "transistors M4-M6 are deactivated" in the reference's column 5, lines 6-10 description) as now recited within claim 1. Therefore, the sole prior art rejection described in the previous Office Action has been withdrawn.

Although various other concerns were noted when the claims were carefully reviewed and considered, these were all addressed/corrected by the Examiner's Amendment described above.

There is no known objection or rejection remaining within the present application.

### **REASONS FOR ALLOWANCE**

The following is an examiner's statement of reasons for allowance:

None of the prior art references reviewed and considered shows/discloses a current source as recited within either of independent claims 1 and 6. More specifically, none of the references clearly shows or discloses a current source comprising: 1) a first circuit branch with first/second bipolar transistors, wherein the base and collector of the first transistor are connected together, and a start-up circuit that generates a start-up current that continues to flow, as recited within claim 1, upon which claims 3-5, and 7-8 depend; or 2) a start-up circuit that generates a start-up current that continues to flow, and it comprises a start-up resistor connected between a current path of one start-up transistor and the junction node of the branch and compensation resistors as recited within claim 6. Since there is no strong motivation to modify or combine any prior art reference(s) to ensure all of the limitations within either of the independent claims are met, the claims are deemed patentably distinct over the prior art of record.

Claims 1, and 3-8 are allowed, and have been renumbered as claims 1, 3-5, 7, 6, and 2, respectively for printing purposes. The renumbering takes into account the cancellation of claim 2, and also regroups related claims closer together. For example, claim 6 is now independent, and claims 7 and 8 depend on claims 3 and 1, respectively.

### **PRIOR ART**

The prior art references on the accompanying PTO-892 are cited for interest and documentation purposes only. Wu and Gailhard et al. both show examples of current sources having first/second circuit branches, in a current mirror type configuration, wherein the first branch comprises two transistors, as well as two resistors connected to a junction node. For example, see Wu (Fig. 2:  $P_{21}, N_{21}, R_{21}, C_{21}$ ; and Fig. 3:  $P_{31}, N_{31}, R_{32}, R_{31}, C_{31}$ ) and Gailhard et al. (Fig. 2:  $M_2, M_5, R_1, Q_2, R_2$ ; and Fig. 3:  $M_2, M_5, R_1, Q_2, R_2$ ). However, there is no strong motivation to add a start-up circuit that would generate a start-up current at the resistors' junction node, wherein the current would continue to flow after start-up. Also, there is no strong motivation to replace the MOSFETs of either Wu or Gailhard et al. with bipolar transistors. Fig. 2 of Ebana shows a current source comprising first/second circuit branches in a current mirror type configuration, wherein each branch comprises two bipolar transistor, and the first branch also comprises at least two resistors (e.g. see first branch 6,9,2-4,12). However, 1) second branch 5,8,1 is only coupled to the second reference voltage (e.g. the unlabeled ground connection) through resistor 12, which can be considered part of the first circuit branch; and 2) if the first branch comprises 6,9,2-4, and the second branch comprises 5,8,1, both branches would be connected to the second reference voltage through resistor 12. In either interpretation of the figure, it is not clear if the voltage across a compensation resistor (e.g. one of the resistors within

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the first branch) will reduce changes in output current IREFOUT with respect to variations of the first reference voltage (i.e. the positive voltage understood to be supplied to the upper terminals of resistors 5-7, and 13) as recited within claim 1. Also, the reference does not clearly show the start-up circuit (e.g. 11 and 13-15) comprising a pair of start-up transistors in a current mirror configuration (e.g. transistors 8, 9 and 10 are not considered part of the start-up circuit, and transistors 14-15 are not in a current mirror configuration) as recited within claim 6. Plus, start-up resistor is connected to the junction node of the resistors (e.g. see 4, 3, and 12) through transistors 14-15. Therefore, there is no strong motivation to modify or combine any of these prior art references to ensure all of the claimed limitations are met.

Any comments considered necessary by the applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication, or previous communications, from the examiner should be directed to Terry L. Englund whose telephone number is (571) 272-1743. The examiner can normally be reached Monday-Friday from 7 AM to 3 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Callahan, can be reached on (571) 272-1740.

The new central official fax number is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1562.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Terry L. Englund

30 March 2005